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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,974	12/10/2003	Takashi Toyofuku	Q78812	5118

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EXAMINER	
WASHINGTON, JAMARES	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/730,974	TOYOFUKU, TAKASHI	
	Examiner	Art Unit	
	Jamares Washington	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10 December 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 12/10/2003.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ehud Spiegel (US 5615282) in combination with Masataka Hasegawa et al (US 6856410 B1).

Regarding claim 1, Spiegel discloses an image processing apparatus (") comprising:

an image reception section (Fig. 2 Input bus) which receives CT image data (Fig. 2 numeral 24 CT input buffer receives continuous tone image data from the input bus) consisting of bitmap data representing a continuous gradation image ("A preferred format for regions of the first type in which the color and tone vary continuously is pixel by pixel representation, such as

"CT" (continuous tone) format" at column 1 line 37. Continuous tone images are described pixel-by-pixel in a bitmap.) and LW image data consisting of bitmap data representing a line drawing (One preferred format for regions of the second type in which the color and tone vary only between sub-regions is "LW" (line work) format, also known as "run length encoding" or "line art" at column 2 line 1. Fig. 2 numeral 22, LW Bit Map input buffer), in which the line drawing includes line, character, and graphics drawings (Although not expressly stated, LW files (line work files) incorporates high resolution data like line art images, text, or lines from drawings. – Secondary teaching "The TIFF/IT file format" L. Leurs 2001 pg. 4 of 5 The LW file);

an image synthesizing section which synthesizes the CT image data and the LW image data corrected by the gradation correction section (Fig. 5 numeral 36 Merger. "A merging unit 36, described in detail hereinbelow with reference to FIG. 6, "opens" the LW data received from LW buffer 34 for the line currently being processed and assigns a color value to each pixel. The color value is determined by the transparency indication of the corresponding LW pixel. If the LW pixel is indicated to be transparent to CT, the CT value, arriving from scaler 32, is assigned to the pixel. Otherwise, the LW value is assigned to the pixel" at column 36 line 55), whereby generating image data representing an image including both a continuous gradation image region and a line drawing region ("The output of merger 36 is, therefore, a valid (i.e. non-"garbage") but not necessarily optimal representation of the entirety of the color image" at column 36 line 62); and

an image transmission section (The aforementioned described apparatus is obviously computer implemented and therefore carries out transmission functions through software

execution.), which sends the image data generated by the image synthesizing section (Fig. 5 numeral 36 Merger) to a printer ("The color module 1014 outputs to the output module 1016 which typically comprises an output buffer 1054, a screening unit 1056 and a plotter interface unit 1058" at column 83 line 18. The plotter interface unit suggests a printer).

Spiegel fails to disclose a gradation correction section, which performs gradation correction processing so as to correct the CT image data, and the LW image data received by the image reception section, independently of each other.

However Hasegawa, in the same field of endeavor of image processing of two different types of image data to effectively generate a better quality image ("...the object of the present invention is to clear a preparing method of the digital print by which the print can be conducted in the harmonized condition of the character information and the image information, and the apparatus for the method" at column 3 line 56, Hasegawa), discloses a gradation correction section (Fig. 1 LUT (left) and LUT (right). Look up tables are used to correct gradations in images. "In the gradation correction method in the above-described conventional color image output apparatus 1, because the correction (modification) of the gradation characteristic (input output corresponding relationship) of one dimensional LUTs 2-4 is conducted by trial and error, according to the correction of one dimensional LUTs 2-4 corresponding to the above difference, one dimensional LUTs 2-4 after correction is used" at column 3 line 17) which performs gradation correction processing (Software implemented by way of the gradation Look Up Tables) so as to correct the CT image data (Fig. 2 LUT (right) for image information.) and the LW image data (Fig. 2 LUT (left) received by the image reception section, independently of each

other (Shown in Fig. 2 "...the character data and the image data are separated from the data of the image prepared in FIG. 2, and processed by using respective LUTs" at column 10 line 38);

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Hasegawa of providing respective Look Up Tables for gradation correction of the image data (continuous tone and line work image data) processed by the apparatus as disclosed by Spiegel to better obtain the desired colors of the respective regions. "When the character data and the image data are converted by the single LUT, in the print, there is a case where disharmony is generated in a character portion and an image portion. For example, specifically for a fine line, MTF is lowered, the density is decreased, or because the short time exposure characteristic and MTF (gradation) are different depending on the color, the color balance is changed, and therefore, when the print of the character image is conducted by the LUT for general image use, there is a problem that the desired color is hardly obtained" at column 1 line 31, Hasegawa.

Regarding claim 2, the Spiegel-Hasegawa combination discloses an image processing apparatus according to claim 1, wherein the gradation correction section comprises a correction lookup table for CT image (as rejected in claim 1 above) and a correction lookup table for LW image (as rejected in claim 1 above), each of which describes association of data before correction and data after correction (Fig. 9 Example 1: Gradation look up tables are constructed from input and output image values by design.), and wherein the gradation correction section subjects the CT image data received by the image reception section to the gradation correction processing (Implemented through computer-based software consulting the CT look up table

rejected in claim 1 above) and subjects the LW image data received by the image reception section to the gradation correction processing (Implemented through software consulting the LW look up table rejected in claim 1 above), by referring to the correction lookup table for CT image and the correction lookup table for LW image respectively (The idea of referring to the lookup tables to correct gradation of the respective image data is implied throughout the reference as gradation correction is performed in this manner and previously described in the rejection of claim 1 above).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spiegel-Hasegawa as rejected in claim 2 above in combination with Masahiro Suzuki (US 7034964 B2).

Regarding claim 3, the Spiegel-Hasegawa combination discloses an image processing apparatus as rejected in claim 2 above.

The Spiegel-Hasegawa combination fails to disclose the gradation correction section adding a random number to data obtained by referring to the correction lookup table for CT image, to thereby generate CT image data after correction with respect to the CT image data received by the image reception section, and also adds a random number to data obtained by referring to the correction lookup table for LW image, to thereby generate LW image data after correction with respect to the LW image data received by the image reception section.

However, Suzuki teaches, in the same field of endeavor of gradation correction image processing methods, adding a random number to data obtained ("...there is provided a method for gradation reproduction... the gradation reproduction method comprising determining the

interval between the threshold values so that the amplitude of the corrected data according to rising and falling variations in the corrected error spikes outward beyond the threshold values at least at a halftone gradation between a darkest gradation and a lightest gradation... whereby generation of a transient region is prevented where the amplitude of the corrected data becomes excessively small at the halftone gradation of the corrected data, and wherein pseudo-random numbers are added to the input image data" at column 4 line 18) by referring to the correction lookup table ("...the method for gradation reproduction... according to the present invention determines the threshold values according to the gradation of the input image data by referring to a threshold value look-up table... and the look-up table determines the threshold values according to the gradation of the input image data" at column 4 line 49) for CT image data ("...gradation reproduction of continuous tone images..." at column 4 line 8), to thereby generate CT image data after correction with respect to the CT image data received by the image reception section ("...an error between a data item before multivaluing and the corresponding multivalued data item is spread, as a corrected error, under spreading conditions determined by weight coefficients, to a plurality of subsequent data items successively input to obtain corrected data, and the corrected data is multivalued, the gradation reproduction method comprising determining the interval between the threshold values so that the amplitude of the corrected data according to rising and falling variations in the corrected error spikes outward beyond the threshold values at least at a halftone gradation between a darkest gradation and a lightest gradation..." at column 4 line 24) and also adds a random number to data obtained by referring to the correction lookup table for LW image (Although not expressly stated, it would have been obvious to incorporate the teachings of Suzuki for Line Work image data and would not deviate

from the scope of the invention to effect the same results as taught above for the continuous tone image data), to thereby generate LW image data after correction with respect to the LW image data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Suzuki of adding a random number to the continuous tone and line work image data in the lookup tables of the apparatus as disclosed by the Spiegel-Hasegawa combination because "according to the continuous tone image gradation reproduction method of the invention, the interval between the threshold values is determined so as to prevent generation of a transient region where the amplitude of the corrected data becomes excessively small at the halftone gradation of the corrected data. Therefore, the interval between the threshold values can be reliably selected so as to ensure continuity of gradation" (at column 17 line 36, Suzuki). This would prevent a large jumps in neighboring gradation values and improved gradation expression can be realized.

4. Claims 4, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spiegel-Hasegawa-Suzuki in combination with well-known principles in the art of image processing.

Regarding claim 4, the Spiegel-Hasegawa-Suzuki combination discloses the image processing apparatus as rejected in claim 1 above.

Hasegawa fails to teach an image processing program storage medium storing an image processing program executed in an information processing apparatus.

However, it is clear from the disclosure of the reference that the processing method is carried out by an image processing apparatus. It is well known in the image processing arts that a computer implemented method performed by an apparatus must receive "instructions" from an image-processing program residing on a computer readable "storage" medium in order for the apparatus to be operational. (Official Notice)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a computer readable storage medium which stores an image processing program for performing the above method, in the invention disclosed by the Spiegel-Hasegawa-Suzuki combination, to make the apparatus operational.

Regarding claim 5, the Spiegel-Hasegawa-Suzuki combination discloses the image processing program storage medium as rejected in claims 2 and 4 above.

Regarding claim 6, the Spiegel-Hasegawa-Suzuki combination discloses the image processing program storage medium storing an image processing program as rejected in claims 3 and 5 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamares Washington whose telephone number is (571) 270-1585. The examiner can normally be reached on Monday thru Friday: 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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~~PRIMARY~~ EXAMINER
Supervisory Patent

JW

June 20, 2007